

**SYNOPTIC TABLE OF NORTH AMERICAN SPECIES
OF DIADASIA (HYMENOPTERA, APOIDEA).**

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In the following key to the males and females of *Diadasia* nearly all the described species found in North America, north of Mexico, are included. The few omissions are noted at the end of the key.

KEY TO DIADASIA.

Males.

1. Clypeus black; mesonotum shining, more or less punctured 2
Clypeus and spot at base of mandible pale yellow or creamy
white; mesonotum dull, obscurely punctured. *ochracea* (Ckll.)
2. Hair of head and thorax entirely pale 3
Hair of head, pleura, propodeum, legs and abdomen mostly
black; hind tibiae with a thorn-like tooth on under side
at apex *nigrifrons* (Cress.)
3. Tibial spurs strongly curved at apex; hind basitarsi greatly
produced at apex beneath, the process either comma-
shaped or evenly rounded at apex 4
Tibial spurs only slightly curved, or briefly hooked at apex;
hind basitarsi without a large process at apex 7
4. Process of hind basitarsi dilated and rounded at apex, reaching
about middle of following joint 5
Process of hind basitarsi curved, dilated at base, more or less
comma-shaped 6
5. Process almost evenly rounded at apex; hair of abdomen abund-
ant, rather long, erect and ochraceous, with a narrow apical
band of depressed, more whitish hair on tergites 2 to
5; base of tergites 2 to 6 may have inconspicuous black
hair; length, 12-15 mm. *opuntiae* Ckll.
Process a little less dilated, outer margin nearly straight, apex
oblique (longer on outer side); hair of abdomen thinner
and shorter, subdepressed, forming a moderately narrow,
even, white apical band on tergites 1 to 6, broader and less
defined on 6, the disk of 3 to 5 and base of 6 with black
hair; hair of tergite 2 whitish except a narrow band of
black intervening before apical band, which is subdilated
medially; length, about 11 mm. *piercei* Ckll.
6. Process of hind basitarsi reaching apex of following joint, or a
little beyond; 3rd antennal joint equaling 4+5, 5 dis-

tinctly shorter than 6, somewhat longer than 4; apical appendage of stipites moderately expanded subapically.

australis (Cress.)

(Including *australis californica* Timb.)

Process of hind basitarsi broader across the base, not quite reaching apex of following joint, less comma-shaped; 3rd antennal joint somewhat shorter than 4 + 5, 5 equaling 6, nearly twice as long as four; apical appendage of stipites with a much broader, more concave expansion subapically.

rinconis Ckll.

(Including *rinconis petrina* Ckll. and *rinconis mimetica* Ckll.)

7. Abdomen with pubescence entirely pale 8
 Abdomen with more or less fuscous or black hair, especially at base of tergites of the last five segments 13
8. Hair of abdomen much depressed, except on the first two tergites 9
 Hair of abdomen suberect, moderately long 12
9. Frons depressed in front of ocelli 10
 Frons with a large rounded polished boss on each side of median line in front of ocelli *tuberculifrons* Timb.
10. Smaller species; teeth of 7th tergite spine-like, well separated; 6th ventrite with a large tuft of white hair on each side near base 11
 Larger, about 8.5-11 mm. long; apical teeth of 7th tergite broad and blunt, with a narrow notch between. *laticauda* Ckll.
11. Basal area of propodeum polished and shining. *sphaeralcearum* Ckll.
 Basal area of propodeum tessellate and dullish. *sphaeralcearum affinis* Timb.
12. Larger, about 11-13 mm. long; head as long as wide; middle joints of flagellum longer than wide, the first two shorter, about equal; 6th ventrite with short, moderately dense, erect pale pile except toward base *enavata* (Cress.)
 Smaller, about 8 mm.; head wider than long, vertex broad; middle joints of flagellum as long as wide, the first joint distinctly longer than second; 6th ventrite with short brown, or blackish, hair on each side near base, and a band of paler pile at apex *diminuta* (Cress.)
13. Head no wider than long, inner orbits parallel 14
 Head more or less distinctly wider than long, the vertex broad, inner orbits converging below 15

14. Smaller, about 9 mm. long; head somewhat longer than wide; abdomen with subdepressed hair, black on disk of tergites 2-7; white apical band on tergites 2-6 moderately wide; hind basitarsi not noticeably flattened beneath nor sharp-edged anteriorly *angusticeps* Timb.
 Larger, about 12-13 mm. long; hind basitarsi much flattened beneath, subdilated before the apex, sharply edged on anterior margin; abdomen with thin black hair, except on first two tergites, the white apical band on tergites 2-5 or 2-6 narrow; tergite 7 bilobate at apex.
bituberculata (Cress.)
15. Basal area of propodeum shining, more or less polished . . . 16
 Basal area of propodeum minutely tessellate, dull; hair of tergites long, erect, the black hair at base of segments shorter, often not very apparent *nitidifrons* Ckll.
16. Apex of 6th ventrite with conspicuous dense erect pile, the disk comparatively nude at least on basal half 17
 Ventrite 6 with comparatively short inconspicuous pile at apex and a dense brush of hair on each side toward base, or the entire disk with short, thin inconspicuous pile 18
17. Larger, about 9-10 mm. long; apical half of 6th ventrite with dense brush of fuscous hair; apical appendage of stipites ovally expanded before the acute apex; vernal species.
martialis Timb.
 About 7-8 mm. long; apex of 6th ventrite with a tuft of dense pile, more or less divided in median line, the greater part of disk nude (normally only the apex of 6th ventrite exposed by a broad median emargination at apex of ventrite 5); apical appendage of stipites dilated at base, slender and very acuminate beyond *consociata* Timb.
18. Ventrite 6 with a dense hair-brush on each side toward base; the apical middle with shorter pile 19
 Ventrite 6 with thin short pile all over, a brush of longer hair at each side either vaguely indicated or absent 22
19. Larger; about 9-10 mm. long; hair-brushes at base of 6th ventrite pale and large, extending to middle but not quite joining, the apex with short dense pile, the middle of disk nude and polished; inferior apical appendage of stipites moderately wide, acute at apex, with a depression on under margin from base to beyond the middle of inferior appendage *palmarum* Timb.
 About 7-8 mm. long; hair-brush on each side of base of 6th

- ventrite small, black, the surface of disk otherwise shining, thinly pilose, the pile becoming denser and longer at apex; inferior apical appendage of stipites rather narrow at base, tapering and acuminate toward apex; superior apical appendage short, oval 20
20. Apical teeth of tergite 7 usually slender 21
Apical teeth rather short and broad at base, blunt at apex; inferior apical appendage of stipites sharply acuminate at apex, nearly straight on inner margin, broadly rounded on basal half of outer margin, where it is subdiluted; superior apical appendage a little less than one-third as long as inferior appendage, and with a circular foveate depression on inner margin at base *lutzi lutzi* Ckll.
21. Inferior apical appendage of stipites less sharply acuminate than in *lutzi*; curvature of outer margin forming a shorter arc confined to base; superior apical appendage much smaller, about one-fifth to one-fourth as long as inferior appendage *lutzi difficilis* Timb.
Inferior apical appendage feebly dilated at base, narrow, slightly tapering, but hardly acuminate; superior apical appendage still smaller, between one-fifth and one-sixth as long as inferior appendage *lutzi deserticola* Timb.
22. Larger species, 8–10 mm. long, pubescence of abdomen erect, the pale apical bands narrow 23
Smaller, about 6.5–7 mm. long; pubescence of abdomen rather short, depressed and ochraceous, but black on disk of tergites 3 to 6; apical band on these segments broad, even, sharply defined; disk of ventrite 6 with uniformly short erect pile; superior apical appendage of stipites short and broad, not surpassing apex of incurved spur at apex of stipites; inferior apical appendage long and narrow.
afflictula Ckll.
23. Hair of abdomen subuniformly long, pale ochraceous, but mainly black on tergites 3 to 7; apical band on tergites 2 to 5 narrow, white, the integument beneath bands whitish hyaline; pile of ventrite 6 uniformly short; inferior apical appendage of stipites long and slender, the superior appendage similar, about seven-eighths as long.
afflicta (Cress.)
Hair of abdomen long, but becoming shorter toward base and at apex of tergites 2 to 6, whitish or pale ochraceous, becoming black on 7 and on more than the basal half of 3 to 6; as seen from in front the apical bands appear very

narrow and somewhat fringe-like, but viewed from side they appear broad; pile of ventrite 6 short, becoming somewhat longer but not denser in a feebly defined brush on each side at base; inferior apical appendage of stipites long, moderately narrow, and acuminate; superior appendage short and broad, not surpassing the incurved spur at apex of stipes *vallicola* Timb.

Females.

1. Mesonotum shining, more or less punctured 2
Mesonotum opaque, impunctate; front femora with long, dense hair beneath, forming a dense beveled brush toward base *ochracea* (Ckll.)
2. Front femora without a long acute process at base beneath 3
Front femora with a long acute process at base beneath; hair of head, pleura, legs and abdomen, except first one or two tergites, black *nigrifrons* (Cress.)
3. Spurs of middle and hind tibiae strongly curved at apex . . 4
Spurs nearly straight or slightly hooked at apex 8
4. Basal area of propodeum smaller, microscopically tessellate and more or less dull, or opaque 5
Basal area more delicately tessellate and moderately shiny; lateral margins of basal area nearly straight except near end where they curve downward and meet just below center of segment; pubescence fulvo-ochraceous, paler beneath; abdominal bands broad, widened in middle on tergites 2 to 4; length usually about 13 mm.
opuntiae Ckll.
5. Basal area less opaque, its lateral margins less arcuate; sides of vertex feebly tessellate; third antennal joint about two and one-half times as long as thick at apex 6
Basal area opaque; its lateral margins more arcuate; sides of vertex polished; third antennal joint about twice as long as thick at apex 7
6. Pubescence of tergites entirely pale, subappressed, becoming denser and band-like at apex of 2 to 5, that at apex of 5 fulvo-ferruginous *australis* (Cress.)
Pubescence at base of tergites 2 to 4 brown or black; apical margin of tergites 2 to 6 with ochraceous band moderately broad, widened in the middle; hair at apex of tergite 5 more or less fulvo-ferruginous, or tinged with brown.
australis californica Timb.
7. Pubescence usually pale ochraceous or cinereous; apical band

on tergites 2 to 4 rather broad, narrowed on each side in front by a broad emargination, that on 2 extended forward to base on lateral margins *rinconis* Ckll.

Pubescence more or less fulvo-ochraceous; apical band on tergites 2 to 4 narrow, even, a little widened medially on 4, that on 2 not extended forward at the sides; disk of tergites 2 to 4 and basal half of 5 with black hair.

rinconis mimetica Ckll.

8. Scopa of hind legs generally whitish or ochraceous; if scopa is brownish or fuscous, the hair on outer side of front and middle tibiae obviously light in color; head more or less broader than long, with orbits diverging above, and basal area of propodeum shining 9

Scopa of hind legs black and hair of front and middle tibiae and tarsi very dark; head somewhat broader than long, the inner orbits parallel; basal area tessellate and dull; hair of abdomen beyond second segment black, with a narrow white apical band on tergites 2 to 4; mesonotum with rather dense pale brown or ochraceous hair.

bituberculata (Cress.)

9. Head wider than long, inner orbits more or less divergent above 10

Head a little longer than wide, inner orbits parallel; hair on disk of tergites 2 to 4 and on base of 5 more or less blackish or intermixed with black; apex of tergites 1 to 4 with a moderately wide white band; sides of tergite 6 and apex of 5 with reddish or chocolate colored hair; basal area polished; length, about 8-10 mm.

angusticeps Timb.

10. Large species, 12-15 mm. long; head but little wider than long, inner orbits feebly divergent above; hair of mesoscutum dense on anterior third and lateral margins, but a large quadrate area nude or very thinly hairy 11

Smaller, about 7-11 mm.; mesoscutum often bare on posterior part, but the nude area generally due to wear and more or less irregular in shape 12

11. Pubescence fulvo-ochraceous, paler beneath and on abdomen; hair of abdomen depressed, except at base of tergite 1, denser and forming a narrow band at apex of tergites 2 to 4; apex of tergite 5 with a broad dense fulvo-ochraceous band; scopa unusually broad and dense, finely plumose; basal area dull; length, about 12-13 mm.

enavata (Cress.)

- Pubescence pale ochraceous, white beneath and on abdomen; hair on basal part of tergites much longer and less depressed than in *enavata*; apical bands narrow, the tegument beneath bands whitish hyaline; hair on tergite 5 rather dense and pale ochraceous (that on apical margin worn away in type and probably ferruginous); scopa less ample, less dense than in *enavata*, pale ochraceous, becoming dusky on lower half of the basitarsal portion; apical joint of tarsi conspicuously darker than preceding joints; length of type, about 13.5 mm.; anterior wing, 10.8 mm.; width of abdomen, 5.5 mm. *megamorpha* Ckll.
12. Hair of abdomen entirely pale, or with only a trace of black hair at base of segments 13
 Considerable black hair at base of tergites 2 to 5, or 3 to 5 20
13. Pubescence of abdomen uniformly dense over entire surface of tergites 14
 Pubescence of abdomen less dense, the apex of tergites 1 to 4 or 2 to 4 more or less fasciate 16
14. Frons without bosses in front of ocelli; smaller more slender species, 6-8 mm. long 15
 Frons with two polished rounded bosses just in front of ocelli; basal area of propodeum polished; length, 7-8 mm.
tuberculifrons Timb.
15. Basal area polished *sphaeralcearum* Ckll.
 Basal area tessellate and rather dull.
sphaeralcearum affinis Timb.
16. Basal area polished; mesopleura polished and finely punctured 17
 Basal area dull; mesopleura slightly dullish, and closely, moderately coarsely punctured; first two tergites with thin erect hair, the following segments successively more hairy, the hair depressed, rather coarse, but apex of tergites 2 to 4 with a narrow band of denser finer hair; hair at apex of tergites 5 and on sides of 6, ferruginous; length, about 9-11 mm. *laticauda* Ckll.
17. Hair on disk of tergites before the apical band, rather dense, partially concealing the surface; scopa of hind legs ochraceous or whitish 18
 Hair on disk of tergites thin, more or less exposing the surface; scopa more or less fuscous or brownish fuscous, at least on the dorsal margin 19
18. Apical bands of abdomen narrow, white, sharply defined on

tergites 1 to 4; hair preceding the bands depressed, rather dense and coarse, with a few short erect white hairs interspersed; hair at apex of abdomen ferruginous brown or somewhat fuscous; scopa of hind legs ochraceous or whitish; length, 8-9 mm. *diminuta* (Cress.)

Hair of abdomen more ochraceous, less depressed, the apical bands much broader, not sharply defined, the erect hair more or less infuscated; hair at apex of abdomen more or less fulvous; apical margin of tergites beneath the bands not definitely whitish hyaline; length, 8-9 mm.

vallicola Timb.

19. Hair of abdomen white, the bands moderately narrow, not sharply defined; hair at apex of abdomen and on venter and scopa brownish fuscous; apical margin of tergites whitish hyaline beneath the bands; clypeus with rather coarse, moderately sparse round punctures; length, 8 mm. *lutzi lutzi* Ckll.

Hair of abdomen pale ochraceous; bands a little broader and less defined, the hair becoming gradually thinner toward base of segments; erect hairs interspersed on tergites blackish, and some of the depressed hair at extreme base of the tergites sometimes black; scopa more less brownish fuscous on dorsal margin and pale ochraceous below; punctures of clypeus closer and more or less sulcate; length, 7-8 mm. *lutzi deserticola* Timb.

20. Tergites 3 to 5 with more or less black hair at base; hair of tergite 2 entirely or predominantly light, sometimes slightly infuscated across the middle of disk, or at base 21

Tergites 2 to 5 with much black hair on basal part of disk 23

21. Smaller species, 8-10 mm. long; hair of tergite 5 mainly light 22

Larger, 10-11 mm. long; hair of tergite 5 mainly black, but whitish at sides subapically, or with light hairs intermixed subapically across the middle; apical band on tergites 2 to 4 white, dense, sharply defined, narrow at sides and broadened in middle; scopa brownish black, rather loose; clypeus with moderately close coarse punctures.

afflicta (Cress.)

22. Clypeus with moderately coarse, more or less sulcate punctures; hair of abdomen white, with rather inconspicuous black hair at base of tergites 3 to 5, or sometimes 2 to 5; hair at apex of tergite 5 and on sides of 6 dark brown

or blackish; apical band on tergites 1 to 4 rather broad, not sharply defined; scopa of hind legs more or less brownish fuscous; length, about 8 mm.

lutzi difficilis Timb.

Clypeus with rather fine close punctures; head less transverse, abdomen broader; basal half of tergites 3 to 5 with black hair, or with thin pale hair more or less intermixed with black; apical band on 1 to 4 broad, even, moderately sharply defined, whitish; hair at apex chocolate brown, preceded on 5 by a white band; scopa pale ochraceous, more or less brown on basitarsi; length, 9-10 mm.

palmarum Timb.

23. Basal area of propodeum shining 24

Basal area of propodeum dull; clypeus coarsely punctured, sometimes with a few fine punctures interspersed; hair of abdomen rather long, but depressed, the apical bands broad, the black basal bands sometimes hidden when segments are retracted; pubescence of mesonotum and light bands of abdomen fulvo-ochraceous; length, about 8-9 mm. *nitidifrons* Ckll.

24. Similar to *nitidifrons*, but mesoscutum moderately closely and uniformly punctured; the hair shorter on posterior part of disk but not much thinner; hair bands of abdomen whitish, covering less than half of each segment at middle, slightly narrowed sublaterally on tergites 3 and 4; hair of abdomen slightly shorter; hair at apex of abdomen and on inner side of tarsi generally blacker; length, 8-9 mm. *martialis* Timb.

Smaller, about 7-8 mm. long; hair of head and thorax shorter, more depressed on mesonotum, more ochraceous, whitish beneath on thorax, cheeks and face; hair bands of abdomen more sharply defined, the black bands at base of segments generally apparent on tergites 2 to 5, unless abdomen is much contracted; clypeus dullish, finely, more or less obscurely punctured, with a few large punctures interspersed; basal area polished, or very slightly dullish *consociata* Timb.

Diadasia vallicola Timb.

The female was known but had not been associated with the male type when this species was described. In 1939, after the description had been submitted for publication, the following material of *vallicola* was collected: 1 male, 2 females, on *Sphaeralcea ambigua*,

3½ miles southwest of Victorville, California, May 4 (Timberlake & W. P. Cockerell); 7 males, 5 females, on *Aster abatus*, 3 miles southwest of Victorville, May 12 (Timberlake); and 3 females, on *Sphaeralcea ambigua*, Morongo Valley, San Bernardino County, May 7 (Timberlake & W. P. Cockerell). One female had previously been taken near Victorville, on *Aster abatus*, May 17, 1930; and two females at Kramer Junction, May 1, 1936 (C. M. Dammers). The characters given for the female in the above table should be sufficient for its recognition.

Diadasia blaisdelli Ckll.

The type of this species, a female from Poway, San Diego County, California, has been examined. It is not much different from females of *D. ochracea* Ckll. from southern California and I doubt if it is really distinct. It seems to be only an exceptionally brightly colored specimen of *ochracea*, but I have not had typical New Mexico material for comparison.

Diadasia friesei Ckll.

This I have not seen. It was described from the female, which probably would run to *D. opuntiae* in the table. According to the description, it differs from *opuntiae* in the size (11 mm.), pale ochraceous pubescence, and narrow hair-bands of abdomen, ill-defined anteriorly. It was based on a Morrison specimen, ostensibly from southern California, but it has never been recognized from that region, and probably actually came from northern Mexico.

Diadasia piercei Ckll.

D. piercei was described in both sexes from Corpus Christi and Beeville, Texas. Dr. Cockerell kindly loaned me a male in his collection, which has been included in the above table. The female probably runs, like *friesei*, near *D. opuntiae* in the table. It differs from *opuntiae* and *friesei* in having the dense hair at apex of abdomen chocolate colored.